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A  
LETTER  
TO THE  
GAMESTER.

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NUMB. I.

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WHEREIN

The Mistakes of that Author's Calculation, and  
the Unreasonableness of his heavy Censures  
are plainly demonstrated.

WITH

Some Advice to the STOCK-JOBBER S, and  
others concern'd in *Lottery-Tickets*, in Relation to  
the Two different Sets of Proposals for Insuring Tickets  
at *Mercers-Hall*.

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— *Habeat jam Roma pudorem.*

*Tertius è Cælo cecidit Cato.*

*Quid dignum tanto feret hic Promissor biatu?*

*Parturiunt Montes.*

Juv.

Hor.

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L O N D O N :

Printed for T. BICKERTON, at the Crown in *Pater-*  
*noster-Row*, 1719.

Price 4 d.

*Lottery*

A  
LETTER

TO THE

GAMMASTER

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NUMBER I.

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WHEREIN

The Manner of that Author's Calculation, and  
the Unreasonableness of his heavy Condemns  
are plainly demonstrated.

By T. H.

Some Advice to the STOCK-JOBBERS, and  
others concerned in the Trade, in Relation to  
the present State of the Market for Learning to  
avoid Mistake.

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Printed by J. Smith, in Pall-mall.

1720

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LONDON.

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Price 4s.





A  
LETTER  
TO THE  
GAMESTER.

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N U M B. I.

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*S I R,*



FINDING you engaged in so useful a Design, as that of preventing the Publick from being imposed upon by the Deceits, that are so frequent in Gaming, I am resolv'd to be your Correspondent. And as I am sensible of the Difficulty of the Task you have undertaken, as well as of your want of Capacity for performing it, I think I can no way be more useful to you and your Readers, than by laying open from Time to Time, such Mistakes, as I perceive you will unavoidably fall into, not in the least doubting of a Re-

A

turn

turn of the same good Office, whenever I shall have occasion for it. Therefore Ceremonies set aside, as among those who resolve to be Friends, I shall in few Words acquaint you with the Reason of entering into this Correspondence.

An Acquaintance of mine, who is one of those useful Persons, vulgarly call'd *Stock-Jobbers* (for such I shall always esteem those Gentlemen, who, by affording a ready Market at all Times for Government Securities, do thereby preserve their Credit, and keep up their Value,) happen'd to purchase a great Number of Tickets in the first of the present Lotteries, at a considerable *Præmium*. These, you know, immediately sunk in their Value, upon voting the Second Lottery, and my Friend not easily resolving to suffer so great a Loss, as he must have done by disposing of his Tickets at the Market-Price, was determin'd to keep them till the Drawing, at which Time there was a general Expectation they would rise. In this he was again disappointed, the Tickets being considerably under *Par*, both before and after they began to be Drawn. These Circumstances very much perplex'd him, as having already lost the entire *Præmium*, which he had paid for his Tickets, and being now reduc'd to the Necessity either of selling his Tickets at about 8 *per Cent.* below *Par*, or else of running the Risque of the Wheel. The first he could by no Means resolve upon, and to do the latter might very much incommode him in his Fortune, in case of ill Success. In this Exigence he turn'd his Thoughts upon insuring with the Company at *Mercer's-Hall*, by which Means he propos'd to himself to take the Advantage of what good Fortune might happen, and at the same Time not to run the hazard of a greater Loss, than what he knew, he was  
able



able to bear. His Reason indeed told him, that the Gentlemen, who had subscrib'd so great a Sum as 120000 *l.* had no doubt consider'd very well of their Project, and had it examin'd by good Hands, before they engag'd in it, and therefore in all Probability must make a reasonable Gain out of the Tickets that were insur'd with them. But this he was willing to comply with, for the same Reasons, that usually determine the more prudent Adventurers in Ships and Merchandize to insure their Effects.

In this Juncture came out your Performance, which my Friend, with many others, was allur'd by the specious Title to purchase and read over. But finding by your Computation, that the Company were like to gain above 53000 *l.* out of each Lottery, in case they insur'd the whole, which is more than 10 *per Cent.* he now found himself again at a Loss, and inclin'd rather to sell his Tickets at 7 or 8 *per Cent.* discount, than to allow those Gentlemen so unreasonable a Profit.

While he was under these Doubts, I happen'd into his Company, and as he had never made any Scruple of acquainting me with the State of his Affairs, he unbosom'd himself to me upon this Occasion, and desir'd my Advice, shewing me at the same Time your Computation. I had not at that Time consider'd the Matter, but however, upon running over your Scheme, I presently discover'd several Mistakes in the Calculation, by which I convinc'd him, that you had carry'd the Advantage of the Company much too high, and promis'd him, that, if he would stay two or three Days, I would examine that Affair more particularly, and would acquaint him with the Result. When I had done this, I found the Company were so far from  
making

making above 10 *per Cent.* that they could not propose to gain more than  $4\frac{1}{4}$  *per Cent.* upon their first Proposals, and not quite  $3\frac{1}{2}$  upon their Second, whereby the Adventurers were allow'd to keep their Tickets in their own Hands. Upon which my Friend, who, though he was not qualify'd to go through with the Computation himself, yet repos'd a good deal of Confidence in my Accuracy and Diligence, was immediately made easy, and insur'd his Tickets with the Company upon their last Proposals, whereby he pays 16 *l.* 10 *s.* Insurance-Money for every Set of 12 Tickets.

Now, Sir, as this is probably the Case of many other Persons, besides my Friend, I hope it may not be unserviceable to the Publick, to present them with my Computation, by which I hope to oblige them and you at the same Time. But first of all it will not be improper to detect the Mistakes of that Calculation, upon the Authority of which you have had the Assurance to treat a Set of Gentlemen of Substance and Reputation, like so many Sharpers giving their daily Attendance in Committee, to take in ignorant People upon such Lays, as you represent to be exceedingly fraudulent and disadvantageous.

But before I do this, in order to shew my good Nature and Disposition to agree with you as far as possible, I shall allow you to take it for granted, that insuring Sets of 12, 24, 48, or 96 Tickets, at different Prices, is equally advantageous to the Company. Though, by the by, I can venture to assure you, that they make a greater Advantage by insuring the higher Sets, than an equal Number of Tickets in the lesser Parcels. But as I have neither Leisure nor Inclination to go through with those great Computations, I cannot acquaint you what is the exact Difference, nor is it at all material to our present Purpose. I



I shall therefore proceed to examine your Calculation of the Advantage made by the Company in insuring the Sets of 12 Tickets. *Every one of these, you say, is entitled to two Benefits, and therefore, you suppose, that they shall happen to be drawn exactly two Benefits in a Set, upon which Supposition your whole Computation entirely depends.*

By my Calculation, the whole Number of Chances upon 12 Tickets, for drawing either all Blanks, or any Number of Prizes not exceeding 12, is nearly 2177,000000.

Out of these the Number of Chances for } drawing all Blanks is	244,000000
For drawing only one Prize	586,000000
Only two Prizes	645,000000
Three Prizes, or more	702,000000

From which it appears, that I have almost as great a Number of Chances for drawing only one Prize in 12 Tickets, as for drawing only two; and that I have a greater Number of Chances for three Prizes or upwards, than for two only. Consequently you might more probably have suppos'd, that a Proprietor of 12 Tickets should have had three Prizes or more, than only two. By which the Reader will easily judge, what Stress is to be laid upon a Computation, that has no better Support, than such a Supposition.

Having laid this Foundation, for want of a better, you proceed to tell us, *There are 2721 Sets, that will happen with one Prize of 10 l. and one of 25, or a greater in each Set, and there will be 11334 Sets, that will happen with two 10 l. Benefits in each Set.*



This I see no manner of Reason for; for admitting that there shall always happen two Benefits in each Set of 12 Tickets, yet certainly it will sometimes fall out, that two Prizes of 25 *l.* or upwards, shall arise in the same Set. From which it follows, that there will be fewer than 2721 Sets, that shall happen with a Prize of 10 *l.* and a greater, and more than 11334 Sets that shall have two Benefits of 10 *l.* each; and as often as this happens, the Insurers must pay to the Adventurer 16 *l.* instead of 1 *l.* in order to make up his Sum of 36 *l.*

This you seem in some measure sensible of in the third Article of your Computation, where you consider what the Insurers will have to pay to the Adventurers upon those Sets of Tickets, in which a 25 *l.* Prize shall come up with one of 10 *l.* For there you tell us, that *suppose all the 251. Prizes fall out so, (which is very improbable, for some may and will happen with a greater Prize) there can but 1408 happen so, which, as the Company in this case is to pay to the Adventurers but 1 l. upon each Set, will amount to but 1408 l.*

This indeed is very true, but then from the very Reason that you here give, why this Article can rise no higher than 1408 *l.* it follows that the next ought to be considerably enlarged, since for every 20 *s.* that you take from this Head on account of a 25 *l.* Benefit coming up with a greater Prize, you ought to add 16 *l.* to the next, as has been already shewn.

From this it appears, that even upon your own Supposition of two Prizes arising in every Set of 12 Tickets, a considerable Deduction must be made from the 53000 *l.*  
which

which you allow the Company for Profit. And if we reject this Supposition as arbitrary and unreasonable, it will sometimes fall out, that four or five of the small Prizes shall arise in the same Set, as likewise that one of the greater Prizes shall sometimes fall in with one or two more of the same, or at least with two or three of the smaller ones. In all which Cases the Fortunate will be Gainers, and the Company must make good the Deficiency to those Adventurers who want their Proportion.

You own indeed, to do you Justice, *that it is not Mathematically possible for the Benefit Tickets to arise so justly*, as you had before suppos'd; but then you tell us, *that what Benefits fall short in one Set, will exceed in another*. Which Reason is so far from doing you any Service, that it is the very Foundation of my Argument against you. For where the Benefits exceed in any Set, the Advantage is generally the Proprietors, and the Company is oblig'd to make good the Loss, where-ever they fall short.

You come now *to consider the Matter more exactly, and to make it as plain as possible to every common Understanding, to prevent People's being gull'd of their Money, and becoming Bubbles, as the usual Term is amongst Gamesters*. In order to which, you premise the Company's second Set of Proposals, whereby the Adventurers are to pay 16 l. 10 s. Insurance-Money for every Set of 12 Tickets, to allow the Company no *Præmium* out of the Prizes, and to keep their Tickets in their own Hands. Your Observations upon these are so extraordinary, and so far from being plain to my Understanding, that, for the sake of those Readers who may have more Penetration than my self, I shall give them here in your own Words.

*They*



*They tell you, That to accommodate such Persons, who choose to keep their Tickets in their own Hands, and pay no Præmium on their Prizes, that is, to allow the 5 per Cent. you may pay 27s 6d. present Money each Ticket, that is, 2s. 6d. per Ticket, in lieu of the 5 per Cent. on the Prizes : So that then your Insurance of 12 Tickets will cost you 16l. 10s. for which they agree to pay you 36l. if no Prizes, or if Prizes, to make them up 36l. that is as much as to say, they will lay you 19l. 10s. to 16l. 10s. which is 13 to 11, that the Adventurer will have one or more Benefits in his Set ; if he has none, then they lose their 19l. 10s. for with the 16l. 10s. they are to pay them for their Insurance, and their 19l. 10s. makes up the 36l. they are to pay : But if he has any Benefits, they are to have them, to help 'em to make up their 19l. 10s. So they lay the Adventurer but 13 to 11, and take his Benefits, as far as is sufficient, to make up the 19l. 10s. Whereas, the Bett is, as may easily be demonstrated, 1932,641711 to 244,140625 which is above 7 to 1, that any Adventurer has one or more Benefit Tickets in 12 Tickets. How is it possible there should be such Fools to bett their Money with these Gentlemen at such Disadvantage ? For if they had a mind to lay more Money upon the Lottery, they had better go to White's, or the Groom-Porter's, where they will find Gentlemen enough will entertain 'em upon a more moderate Lay ; nay, they'll be glad to lay 13 to 9, that they have two or more Benefits in 12 Tickets, and the Adventurer to have the Benefit of his own Prizes, which is much better than 13 to 11.*

This latter part of your Advice, I confess, is very plain, and very kind to us Citizens, and no doubt every prudent Man among us, that is inclin'd to Gaming, will think him-  
self



self very much oblig'd to you for recommending him to Places, where he may meet with such civil Usage. For if the Gentlemen at *White's*, and the *Groom-Porter's*, will take him up, upon his laying 9 to 13, when the Bett is a little more than 8 to 13, it's plain, that upon equal Fortune, and fair Play, he can't lose full 7 *per Cent.* of his Money upon every Stake; whereas this *sharping Committee of Directors* are so unconscionable as to lay him no more than 13 to 11, according to your Computation, upon a Bett, where the Odds are above 77 to 11; by which he must lose above 32 *per Cent.* of his Money, as may easily be demonstrated. Which makes it very natural in you to wonder, that *there should be such Fools, as to bett their Money with them upon such Disadvantage.*

But my great Difficulty is, that I am perfectly at a loss, how to state the Wager between the Company and the Adventurers; and therefore, dear Sir, the next Time you appear in Print, be so kind as to inform me, and the rest of your gentle Readers, how I can lay another Person 13 to 11 upon a Wager, and yet lose my Money upon both sides of the Question, which, as you have stated it, seems to be the Company's Case.

To make this Matter as plain as possible, I beg leave to put a Case or two. I insure 12 Tickers with the Company at 16 *l.* 10 *s.* upon their last Proposals. If I have no Benefit, they pay me 36 *l.* that is, they lose 19 *l.* 10 *s.* If I draw a great Prize, or a Number of small ones to the value of above 36 *l.* they get my 16 *l.* 10 *s.* and so far the Thing looks like a Wager. But if this were what you meant, you should have said the Company would lay 13 to 11, that the Adventurer should have one or more Benefits

in his Set of 12 Tickets to the value of above 36 *l.* against his having no Prize at all, which would make a very different Wager from that you have stated.

But let us suppose, that I get one Prize of 10 *l.* only in my Set of 12 Tickets. Must not the Company then pay me 26 *l.*? If they do this, it's plain they lose 9 *l.* 10 *s.* So that, whether I get no Prize, or only one of 10 *l.* they must be Losers. If I get a Prize of 25 *l.* they gain indeed, but 'tis only 5 *l.* 10 *s.* instead of 16 *l.* 10 *s.* which they ought to gain by your Wager. If I get two Benefits of 10 *l.* each, they gain 10 *s.* If one of 10 *l.* and one of 25 *l.* they gain 15 *l.* 10 *s.* if three of 10 *l.* each, they get 10 *l.* 10 *s.* So that, of all the several Cases we have put, there is only one for the Company's losing 19 *l.* 10 *s.* and only one for their gaining 16 *l.* 10 *s.* In all the other Cases they gain or lose different Sums, and consequently you have stated the Case in the most absurd and confus'd manner imaginable, which you had undertaken *to make as plain as possible to every common Understanding.*

I pass over your Calculation of what the Chances of the Benefit Tickets are worth taken separately, against which I have nothing to object. Nor have I much to say about the Inferences you draw from it, as not seeing how far they can be *useful and beneficial* to the Proprietors, or the contrary. I must only take notice to you, that, when you say, *the small Prizes will be of no Advantage* to the Proprietor, *in case he insures*, and that, *if he has not a larger Prize, he had better have none*, you are guilty of a great Mistake. I allow you, that, if his Share of those Prizes amount to less than 36 *l.* he may possibly be something a loser by the Discount upon the Prizes; but I beg you will consider



consider likewise, that, if he gets so many of them, as to make up more than 36 *l.* against which there is no great Odds, he may be a considerable Gainer.

I hope, Sir, by this Time, I have convinced you, or your Readers at least, that you are no way qualify'd for those great Undertakings you pretend to, of *paying the Debts of the Nation*, and thereby *excelling the Famous Mr. Laws himself*, of determining the *Chances of Cities and Countries taken, Fleets and Armies destroy'd, or of Peace and War*. Which last appear to me to depend upon so many Causes not reducible to any *Calculus*, that, I confess, I should despair of seeing them brought to any Certainty, though *De Moivre* himself were to undertake the Computation.

I come now to present you with my own Calculation of the Advantage upon insuring Lottery-Tickets, and humbly hope, that if you discover any Error in it, you will afford me your charitable Assistance to set it to rights, as you see I have done by yours.

I have 244,140625 Chances out of 2176,782336 for getting no Prize at all in a Set of 12 Tickets, so that the Probability of my getting no Prize may be express'd by the Vulgar Fraction

$$\frac{244.140625}{2176.782336}$$

Or by the Decimal Fraction,

$$0,112111$$

If this happens, I shall receive from } *l.* 36  
the Company

So



So that the Value of my Expectation from the Company upon these Chances, is equal to the Product of the Sum expected, namely 36 *l.* multiply'd by the probability, or the Fraction  $\frac{0,11211}{1}$ , that is to The Probability of my having one single Prize of 10 *l.* is the Decimal Fraction

*l.* 4, *dec.* 036

0, 24312

The Sum to be paid me in this Case by the Company is

*l.* 26,

And the Value of my Expectation is the Product of these two, or

*l.* 6, *dec.* 3211

0, 01348

The Probability of one Prize of 25 *l.* is Sum expected

*l.* 11,

Value

*l.* 0, *dec.* 1483

Probability of 2 Prizes of 10 *l.* each Sum expected

0, 24154

Value

*l.* 16,

*l.* 3, *dec.* 8646

Probability of one Prize of 10 *l.* and one of 25 *l.*

0, 02679

Sum expected

*l.* 1,

Value

*l.* 0, *dec.* 0268

Probability of 3 Prizes of 10 *l.* each Sum expected

0, 14544

Value

*l.* 6,

*l.* 0, *dec.* 8726

Value of my Expectation upon no Prize Upon one Prize of 10 *l.*

*l.* 4, *dec.* 0360

One of 25 *l.*

6, 3211

Two of 10 *l.* each

0, 1483

One of 10 *l.* and one of 25 *l.*

3, 8646

Three of 10 *l.* each

0, 0268

0, 8726

Value of all my Expectations from the Company

*l.* 15, *dec.* 2694

Paid

Paid to the Company, upon their first Proposals, for insuring 12 Tickets, at 1 *l.* 5 *s.* each,

*l.* 15, *dec.* 0

Allow'd them upon my Share of the Prizes, at 5 *per Cent.*

*l.* 01, *dec.* 8

---

Received in all by the Company  
Deduct

*l.* 16, *dec.* 8

*l.* 15, *dec.* 2694

---

Company's Profit upon 12 Tickets

*l.* 1, *dec.* 5306

From which it follows, that their Profit, in Case they insure a whole Lottery, will be about

*l.* 21500,

Which is nearly  $4\frac{1}{4}$  *per Cent.* instead of 10 *per Cent.*, or by your Computation.

*l.* 53000,

By their second Proposals, the Company receive for insuring 12 Tickets at 27 *s.* 6 *d.* each.

*l.* 16, *dec.* 5

From which deducting the Value of the Adventurers Expectations.

*l.* 15, *dec.* 2694

---

The Company's Profit upon 12 Tickets is

*l.* 01, *dec.* 2306

So that their Profit in Insuring a whole Lottery upon these Proposals would be about

*l.* 17300,

Which is less than  $3\frac{1}{2}$  *per Cent.* and will I believe be thought no unreasonable Profit, considering their Charge,

D

and

and the constant Attendance of so many Gentlemen, whose Time cannot but be very valuable.

From this Computation it follows, that to gain 1200 *l.* the Company must insure 9400 Tickets upon their first Proposals, or 11700 upon their second.

And to gain 3000 *l.* they must insure 23500 Tickets upon the first, and 29250 upon their last Proposals. Which I mention, not upon your Account, but for the sake of that publick-spirited Person, the Projector of this Insurance, who no doubt understands the Meaning of this Calculation.

Having now gone through with what I propos'd, I come to consider what Service I can do my Reader, in order to enable him some way or other to make up the Six-pence, which my Pamphlet has cost him.

And accordingly, in the first Place, in case he is inclin'd to insure his Tickets at *Mercers-Hall*, I advise him to put in his Tickets in Sets of 12 Tickets each, the larger Sets being more to his Disadvantage, than the smaller. In the second Place I caution him to insure upon the Company's last Proposals, those being more advantageous to him than the first, by above  $\frac{3}{4}$  *per Cent.* Which Advice, I hope, will convince all the World, that I am not brib'd by the Company to this Undertaking. And therefore I charge you, as you value the good Opinion of your Readers, not to drop any Insinuation of that kind, in case you favour me with an Answer.

Lastly,



Lastly, to gratify those of my Readers, who may be inclin'd to Bett Money upon their Tickets, I here present them with an Account of the exact Odds to be laid against 20*s.* that one or two Benefits shall be drawn in any Number of Tickets not exceeding 12.

Tickets.	Odds for 1 Prize.				Odds for 2 Prizes.			
	<i>l.</i>	<i>s.</i>	<i>d.</i>	<i>q.</i>	<i>l.</i>	<i>s.</i>	<i>d.</i>	<i>q.</i>
1 ————	00	04	00	0	00	00	00	0
2 ————	00	08	09	2	00	00	06	3
3 ————	00	14	06	3	00	01	07	1
4 ————	01	01	05	3	00	03	00	2
5 ————	01	09	09	1	00	04	10	2
6 ————	01	19	08	3	00	07	01	3
7 ————	02	11	08	0	00	09	10	1
8 ————	03	06	00	0	00	13	01	0
9 ————	04	03	02	2	00	16	10	1
10 ————	05	03	10	0	01	01	03	1
11 ————	06	08	07	1	01	06	05	1
12 ————	07	18	03	3	01	12	05	1

And now, Sir, I shall take my leave of you for this Time, and crave Liberty to subscribe my self,

*S I R,*

*Your Most Affectionate Correspondent*

*and*

*Fellow-Labourer,*

*Bank of England,  
Octob. 7<sup>th</sup>, 1719.*

**A R E N A R I U S.**























